UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/686,780	10/10/2000	James T. Klosowski	YOR920000688US1	4874

7590 10/21/2004

Louis J. Percello
Intellectual Property Law Dept.
IBM Corporation
P.O. Box 218
Yorktown Heights, NY 10598

EXAMINER	
THANGAVELU, KANDASAMY	
ART UNIT	**PAPER NUMBER**
2123	

DATE MAILED: 10/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/686,780	Applicant(s) KLOSOWSKI ET AL.	
	Examiner Kandasamy Thangavelu	Art Unit 2123	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 August 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5 and 6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5 and 6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *06 August 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This communication is in response to the Applicants' Response mailed on August 6, 2004. Claims 1, 5 and 6 were amended. Claim 4 was deleted. Claims 1-3, 5 and 6 of the application are pending. This office action is made final.

Drawings

2. The drawings submitted on August 6, 2004 are accepted.

Specification

3. The disclosure is objected to because of the following informalities:

The amendment of August 6, 2004 provided the correction to be made to the specification for the reference to related applications, to be inserted as the first paragraph on Page 1 of the application with the heading "RELATED APPLICATIONS". The application numbers provided in the correction are incorrect. The correct application numbers are: 09/686,720 and 09/686,643.

The reference to related applications on Page 17 of the specification with the wording "Alternative uses and methods of simplifying the results of this invention are

disclosed and claimed in ...incorporated by reference in their entirety" should be deleted.

Appropriate corrections are required.

Claim Objections

4. The following is a quotation of 37 C.F.R § 1.75 (d)(1):

> The claim or claims must conform to the invention as set forth in the remainder of the specification and terms and phrases in the claims must find clear support or antecedent basis in the description so that the meaning of the terms in the claims may be ascertainable by reference to the description.

5. Claim 2 is objected to because of the following informalities:

Claim 2, Lines 1-3, "A method, as in claim 1, where the projected vertices and the midpoint of the annotation edge are collinear and the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices" appears to be incorrect and it appears that it should be "A method, as in claim 1, where ***if*** the projected vertices and the midpoint of the annotation edge are collinear, the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices".

Applicants' attention is directed to specification Page 12, Line 18 through Page 13, Line 7, where this process is described.

Appropriate correction is required.

6. Claims 1, 5 and 6 are objected to because each element or step of the plurality of elements in the claim is not separated by line indentation. 37 CFR Rule 75 (i) states that when a claim sets forth a plurality of elements or steps, each element or step of the claim should be separated by a line indentation.

Appropriate corrections are required.

Claim Rejections - 35 USC § 112

7. The following is a quotation of the first paragraph of 35 U.S.C. §112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

8. Claims 1-3, 5 and 6 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

9. Amended claim 1 states, "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

There is no support for this claim limitation in the specification. Specification Page 15, Lines1-18, state that the projected vertices are reconnected by walking along the surface of the model; the algorithm begins at one of the projected end points and walks from triangle to triangle, creating new edges as necessary, until the second projected end point is reached. The algorithm computes and returns the intermediate point and surface triangle during the surface walk. The specification does not describe anywhere the process of "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line ***by summing line segments within the computer model polygons".*** It is also not clear as to what the applicants meant by summing the line segments, since the line segments are defined by the endpoints or the vertices.

9.1 Amended claim 5 states, "means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

There is no support for this claim limitation in the specification. Please refer to Paragraph 8 above for an explanation.

9.2 Amended claim 6 states, "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

There is no support for this claim limitation in the specification. Please refer to Paragraph 8 above for an explanation.

Claims rejected but not specifically addressed are rejected based on their dependency on rejected claims.

Claim Interpretations

10. In claim 1, "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model" has been interpreted as "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***connecting*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

10.1 In claim 5, "means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model" has been interpreted as "means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***connecting*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

10.2 In claim 6, "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***summing*** line segments within the computer model

polygons to produce the projection of the respective annotation edges on the model" has been interpreted as "reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by ***connecting*** line segments within the computer model polygons to produce the projection of the respective annotation edges on the model".

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.

12. The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 1, 3, 5-6 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rose et al.** ("Annotating real-world objects using augmented reality", European computer industry

research center, Germany, June 1995) in view of **Krishnamurthy** (U.S. Patent 6,256,039), and further in view of **Karaski et al.** (U.S. Patent 6,260,000), **Baker et al.** (U.S. Patent 5,363,475) and **Kung et al.** (U.S. Patent 6,633,290).

13.1 As per claim 5, **Rose et al.** teaches annotating real-world objects using augmented reality. Specifically, as per claim 5, **Rose et al.** teaches a computer system that annotates a surface of a computer model having a set of computer model vertices and computer model polygons (Page 4, Fig 3.1; Page 9, Para 3; Page 10, Fig. 6.1; the geometric model used is defined by a set of vertices and polygons and is shown in Fig. 6.1);

a processor to execute a program of instructions stored in a memory of the computer (Page 4, Fig 3.1, workstation);

a memory to store a program of instructions for performing a method for annotating a surface of a computer model and the data defining the geometric model(Page 4, Fig 3.1, workstation);

a graphics processor and a display to display an image of the computer model and the annotation (Page 4, Fig 3.1, Scan converter, workstation monitor and video monitor);

Rose et al. does not expressly teach that the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges. **Krishnamurthy** teaches that the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges (Fig. 1A and 1B; CL3, L31-33; CL3, L55-58; CL5, L40-45; CL7, L39-45), as that would allow to precisely position these curves relative to surface geometry for effective

curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Rose et al.** with the system of **Krishnamurthy** that included the annotations comprising line segments and being specified as geometry in the form of a set of vertices and edges. The artisan would be motivated because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh.

Rose et al. does not expressly teach means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices. **Krishnamurthy** teaches means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices (CL7, L2-3; CL7, L27-29; CL7, L56-59), as that would allow a surface curve to be constructed that passes through the projected points (CL7, L14-16); the curve can be computed so it represents a projection on the polygonal surface of a line joining each pair of successive points CL7, L27-29). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Rose et al.** with the system of **Krishnamurthy** that included means for projecting two or more annotation vertices, being projected vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices. The artisan would be motivated because that would allow a surface curve to be constructed that passed through the projected

points; the curve could be computed so it represented a projection on the polygonal surface of a line joining each pair of successive points.

Rose et al. does not expressly teach means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane is selected by the pair of projected vertices and a midpoint of the relevant annotation edge. **Karaski et al.** teaches means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane is selected by the pair of projected vertices and a midpoint of the relevant annotation edge (CL3, L52-56; CL3, L67 to CL4, L3), because as per **Krishnamurthy** that would allow to precisely position these curves relative to surface geometry for effective curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45); and as per **Karaski et al.** that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26; CL3, L43-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Rose et al.** with the system of **Karaski et al.** that included means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane was selected by the pair of projected vertices and a midpoint of the relevant annotation edge. The artisan would be motivated because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

Rose et al. does not expressly teach means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane is selected by the pair of projected vertices and

a normal to the surface of the model at one or more of the projected vertices. **Baker et al.** teaches means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane is selected by the pair of projected vertices and a normal to the surface of the model at one or more of the projected vertices (CL2, L1-5), because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex (CL2, L1-5); and as per **Krishnamurthy** that would allow to precisely position these curves relative to surface geometry for effective curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45); and as per **Karaski et al.** that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26; CL3, L43-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Rose et al.** with the method of **Baker et al.** that included means for selecting a cutting plane between a pair of the projected vertices, in which the cutting plane was selected by the pair of projected vertices and a normal to the surface of the model at one or more of the projected vertices. The artisan would be motivated because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex; that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

Rose et al. does not expressly teach means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line. **Kung et al.** teaches means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line (Abstract, L3-10), because as per **Krishnamurthy** that would allow to precisely position these curves relative to surface geometry for effective curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45); and as per **Karaski et al.** that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26; CL3, L43-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Rose et al.** with the system of **Kung et al.** that included means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line. The artisan would be motivated because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

Rose et al. does not expressly teach means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by summing line segments within the computer model polygons to produce the projection of the respective annotation edges on the model. **Krishnamurthy** teaches means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by summing line segments within the computer model polygons to produce the projection of the respective annotation edges on the model (Fig. 1A and 1B; CL3, L31-33; CL3, L55-58; CL5, L40-45; CL7, L39-45), as that would

allow to precisely position these curves relative to surface geometry for effective curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the system of **Rose et al.** with the system of **Krishnamurthy** that included means for reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by summing line segments within the computer model polygons to produce the projection of the respective annotation edges on the model. The artisan would be motivated because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh.

13.2 As per Claims 1 and 6, these are rejected based on the same reasoning as Claim 5, supra. Claims 1 and 6 are method and computer product claims reciting the same limitations as Claim 5, as taught throughout by **Rose et al., Krishnamurthy, Karaski et al., Baker et al.** and **Kung et al.**

13.3 As per Claim 2, **Rose et al., Krishnamurthy, Karaski et al., Baker et al.** and **Kung et al.** teach the method of claim 1. **Rose et al.** does not expressly teach that where the projected vertices and the midpoint of the annotation edge are collinear the plane is defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices. **Baker et al.** teaches that where the projected vertices and the midpoint of the annotation edge are collinear the plane is defined by containing the two projected vertices

and a normal to the surface of the model at one or more of the projected vertices (CL2, L1-5), because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex (CL2, L1-5); and as per **Krishnamurthy** that would allow to precisely position these curves relative to surface geometry for effective curve drawing (CL1, L29-31) and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh (CL7, L39-45); and as per **Karaski et al.** that would allow calculating the length of a path including points on the surface of a three-dimensional shape (CL3, L23-26; CL3, L43-45). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Rose et al.** with the method of **Baker et al.** that included that where the projected vertices and the midpoint of the annotation edge were collinear the plane was defined by containing the two projected vertices and a normal to the surface of the model at one or more of the projected vertices. The artisan would be motivated because the entire 3D surface could be defined using polygons having defined vertices and a defined surface normal drawn perpendicular to the plane of the polygon from one vertex; that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

13.4 As per Claim 3, **Rose et al., Krishnamurthy, Karaski et al., Baker et al.** and **Kung et al.** teach the method of claim 1. **Rose et al.** does not expressly teach that the projected vertices

are projected on the surface within a tolerance by snapping. **Kung et al.** teaches that the projected vertices are projected on the surface within a tolerance by snapping (CL5, L35-42), as that would provide a collection of points that are close together to form a collection of polylines with nonintersecting segments (CL5, L38-42). It would have been obvious to one of ordinary skill in the art at the time of Applicants' invention to modify the method of **Rose et al.** with the method of **Kung et al.** that included the projected vertices being projected on the surface within a tolerance by snapping. The artisan would be motivated because that would provide a collection of points close together to form a collection of polylines with nonintersecting segments.

Response to Arguments

14. Applicants' arguments filed on August 6, 2004 have been fully considered. Applicants' arguments, filed on August 6, 2004 under 35 U.S.C. §103 (a) are not persuasive.

15. As per the applicants' arguments, the applicants' attention is requested to the corresponding claim rejections. In addition, the following explanation is provided to further explain the examiner's position.

15.1 As per the applicants' argument that "it is not proper to make the combination of RO and KA; the RO reference teaches annotating in the sense of displaying a text label on a video image;... there is no model surface in RO and no lines that closely follow a surface;... the video of RO does not provide the foundation for the calculations of KA, since there is no computer

scan data for KA to put into his computer model and no computer model for KA to apply his mathematical techniques to; the combination of KA and KU is inconsistent... applying KU to KA would defeat the purpose of KU which is to avoid the computer model ", the Examiner respectfully disagrees.

Rose et al. teaches a computer model having a set of computer model vertices and computer model polygons (Page 9, Para 3; Page 10, Fig. 6.1; the geometric model used is defined by a set of vertices and polygons and is shown in Fig. 6.1).

The applicants have modified the independent claims so that the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges. **Krishnamurthy** teaches that the annotations comprise line segments and are specified as geometry in the form of a set of vertices and edges (Fig. 1A and 1B; CL3, L31-33; CL3, L55-58; CL5, L40-45; CL7, L39-45). **Krishnamurthy** teaches projecting two or more annotation vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices (CL7, L2-3; CL7, L27-29; CL7, L56-59). There is motivation to combine **Rose et al.** and **Krishnamurthy** because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh.

Karaski et al. teaches selecting a cutting plane between a pair of the projected vertices, in which the cutting plane is selected by the pair of projected vertices and a midpoint of the relevant annotation edge (CL3, L52-56; CL3, L67 to CL4, L3). There motivation to combine **Rose et al.** and **Karaski et al.** because that would allow to precisely position these curves

relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

Kung et al. teaches means for cutting the surface of the model with the plane, the plane intersecting the model on a cutting line (Abstract, L3-10). There motivation to combine **Rose et al.** and **Kung et al.** because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh; and would allow calculating the length of a path including points on the surface of a three-dimensional shape.

Krishnamurthy teaches reconnecting the projected vertices on the surface of the model along an approximation to the cutting line by summing line segments within the computer model polygons to produce the projection of the respective annotation edges on the model (Fig. 1A and 1B; CL3, L31-33; CL3, L55-58; CL5, L40-45; CL7, L39-45). There is motivation to combine **Rose et al.** and **Krishnamurthy** because that would allow to precisely position these curves relative to surface geometry for effective curve drawing and compute a graph path between the start point and end point using a sequence of connected vertices of the mesh.

15.2 As per the applicants' argument that "KA reference is inconsistent with the claims, in that the claims require that the vertices of the annotation edge are projected onto the model surface, while KA specifies the opposite… ", the examiner has used **Krishnamurthy** reference against the amended claims.

Krishnamurthy teaches projecting two or more annotation vertices, of an annotation onto the surface of the model, the annotation having annotation edges that connect pairs of the annotation vertices (CL7, L2-3; CL7, L27-29; CL7, L56-59).

15.3 As per the applicants' argument that "it is not proper to reject the claims on selected portions of other references that are not addressing the same problem and would not be consulted by a worker in the field trying to construct a computationally economical method of mapping an annotation line to a surface", the examiner takes the position that computer based geometric models and surface models involving triangular mesh, vertices, edges and polygons were widely known at the time of applicants invention as shown by **Rose et al.** and **Krishnamurthy.** Projecting edges and points on to the surface model was also known as shown by **Krishnamurthy.** Cutting planes involving three points or surface normal and two points were also known as shown by **Karaski et al.** and **Baker et al..** Identifying the points on the edges that fall on the cutting plane was known as shown by **Krishnamurthy.** Connecting the points to form a path and determining the path between two points was also known as shown by **Krishnamurthy** and **Karaski et al.** Any one interested in following a surface curve on the surface model of the object would have combined the references to do the same, because there is motivation to do it as explained in Paragraph 13.1 and 15.1.

ACTION IS FINAL

16. Applicant's amendments necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

17. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Kandasamy Thangavelu whose telephone number is 703-305-0043, till October 27, 2004 and 571-272-3717 after October 27, 2004. The examiner can normally be reached on Monday through Friday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin Teska, can be reached on (703) 305-9704, till October 27, 2004 and 571-272-3716 after October 27, 2004. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-9600.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

K. Thangavelu
Art Unit 2123
October 15, 2004

KEVIN J. TESKA
SUPERVISORY
PATENT EXAMINER